

**BEFORE THE HOUSE OF REPRESENTATIVES
COMMITTEE ON SMALL BUSINESS**

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TESTIMONY OF BRUCE P. MEHLMAN

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Chairman Manzullo, Ranking Member Velázquez, Members of the Committee:

Thank you for inviting me to appear before you today and for your leadership on questions of American competitiveness. The issue of global competition for white-collar service work is an important and timely one. Declines in American employment at all levels concern us deeply, and the February 3, 2003 *Business Week* cover concisely captured the fears of many when its screaming headline asked: "Is Your Job Next?"

Few Americans are feeling greater uncertainty these days than information and communications technology ("IT") workers. Over the past five years, IT workers have endured multiple shocks to IT spending and employment, including:

- the end of Y2K preparations in 1999;
- the bursting of the Internet and telecom "bubbles" in 2000;
- dramatic reductions in corporate IT spending during and after the January-September 2001 recession;
- the 9/11 terrorist attacks;
- investor and business uncertainty as the WorldCom, Enron and other business scandals of the late 1990s came to light;
- continued market caution preceding the liberation of Iraq; and
- accelerating global competition.

At the Commerce Department, the Office of Technology Policy seeks to maximize technology's contribution to American economic growth, job creation and global competitiveness. We have been following trends in the IT workforce for some time, including reporting on global competition in IT services. We have also put significant research and analysis into IT worker education and training opportunities, and Secretary Don Evans this week released a Congressionally-mandated report we prepared on "Education and Training for the Information Technology Workforce." I have brought copies of the report for this Committee, and it can also be found online at:

www.technology.gov/reports.htm.

Today I offer testimony on trends and implications of global competition in IT services, a broader assessment of American strengths and challenges to remain the world's innovation leader, and Administration policies that are promoting U.S. competitiveness. Notwithstanding many challenges facing our nation, I remain optimistic about America's future and look forward to working with Congress to ensure we provide American workers with the tools, technology and talents needed to compete and win in the 21st century global economy.

GLOBALIZATION OF IT SERVICES: IDENTIFYING THE TRENDS

It is difficult to precisely separate American IT job losses due to the post-bubble business cycle from slower growth in overall IT employment resulting from global competition or “off-shoring”¹ work. Little data exists to demonstrate one-to-one relationships. It is certainly clear that as the growth in U.S. IT jobs slowed dramatically for multiple reasons, the volume and value of off-shored work has increased rapidly. 2001 was the first year in more than two decades with negative growth in U.S. IT employment.

At the same time, the amount of IT service work done overseas has been growing for years. Many analysts agree this global competition in IT services will increase as: (1) offshore IT service providers improve their quality, processes and expertise, (2) improved telecommunications (especially broadband) enables more business customers to outsource and offshore work effectively, and (3) business customers conclude they can realize value and competitive advantage through outsourcing. The Gartner Group estimates that “[b]y 2004, more than 80 percent of U.S. executive boardrooms will have discussed offshore sourcing, and more than 40 percent of U.S. enterprises will have completed some type of pilot.” A widely-quoted 2002 Forrester report estimates that over the next 15 years, 3.3 million U.S. service industry jobs – including 1 million IT service jobs – and \$136 billion in wages will “move offshore.” While other analysts offer less dramatic projections, growing numbers of global competitors are likely to capture increasing shares of IT and white-collar service work.

GLOBALIZATION OF IT SERVICES: ASSESSING THE IMPLICATIONS

As with so many global trends, there is significant disagreement over the implications of this competition for American prosperity and competitiveness. Many observers are pessimistic about the impact of offshore IT service work at a time when American IT workers are having more difficulty finding employment, creating personal hardships and increasing demands on our safety nets. Competitors from lower-wage nations, it is feared, could put downward pressure on profit margins and salaries in this sector going forward, *see IDC Price Erosion Study, 2003*, while the work being sent overseas may migrate up the value chain from call centers, help desks and low-end programming to design, accounting, high-end programming, financial analysis and consulting. Some question the national security implications, asking whether U.S. interests are put at risk by increasing dependence upon foreign nationals to handle economically critical tasks and, often, highly sensitive data. Many fear that reduced wages and increased unemployment in IT might discourage future generations of Americans from pursuing science and technology careers. And the opportunity to do high-wage, high-value work without immigrating to the U.S. reduces the “brain gain” that has contributed to America’s historical success.

¹ It should be noted that “outsourcing” is not the same as “off-shoring.” Outsourcing occurs when businesses hire outside specialists to handle tasks outside their strategic focus or core expertise, such as IT, administration or HR. For example, in December 2002 JP Morgan hired IBM to handle all of its IT operations. Off-shoring refers to outsourcing using service providers outside the U.S. Of course the distinctions become more difficult to make as businesses globally integrate their operations and workforces. Just as buying a Ford does not guarantee a car made entirely in America, buying IT services from IBM does not guarantee use of exclusively American IT workers.

Others suggest the rise of global competition in IT service work is a net positive trend for our nation. Competition drives down prices for businesses and consumers and increases their choices. By outsourcing to lower cost operations, businesses are able to reduce their overhead, compress time-to-completion with around-the-clock operations, and focus on core, strategic investments and hiring. Many manufacturers, for example, are running leaner, more competitive operations as the result of outsourced (often off-shored) IT services, focusing their resources on the research, design and processes for improving their products.² Some have even suggested that off-shored service work is of higher quality, although their data is anecdotal only, and usually provided by those already invested in off-shoring.³ It is worth noting that [fellow witness] Dr. Hira's organization, the IEEE, recently awarded Wipro Technologies – one of the major Indian IT service providers – its prestigious IEEE Award for Software Process Excellence.

Optimists note that the majority of work sent offshore is lower-wage, represents a small fraction of the overall market for software and IT services, and will never displace a large majority of work done here in the U.S., since there are still often failures in large off-shoring efforts. Indeed, the Bureau of Labor Statistics projected in December 2001 that the number of professional IT jobs in the U.S. will grow by 72.7% between 2000 and 2010. And since global competition is a two-way street, U.S. IT companies gain opportunities to win global business, particularly as developing nations improve their own domestic markets for hardware, software and services. For example, IBM won a \$2.5 billion (over 10 years) contract to manage Deutsche Bank's IT operations in December 2003. In fact, in 2001 U.S. cross-border exports of IT services totaled \$10.9 billion, while imports totaled \$3 billion, yielding a trade surplus of \$7.9 billion (*U.S. International Trade Commission*).

PUTTING TRENDS INTO GLOBAL CONTEXT

Many observers suggest that global competition for white-collar service work mirrors trends we have seen for decades and will benefit our nation. During these decades we saw heavy competition in tradable goods (with lower-wage, lower-value-added jobs) and far less competition in knowledge-based services (with higher-wage, higher-value-added positions), such as information technology. Advanced economies leveraged their comparative advantages to develop the high-wage jobs as the lower-skilled work became commoditized and went abroad.

It seems we have entered a new era. Advances in communications technologies have empowered once-distant service sector workers to compete in real-time, while increasing interconnectivity generated new market opportunities for both our businesses and theirs. We are now competing for low-skilled *and* higher-skilled work, both in IT and

² Proctor & Gamble told Fortune Magazine it has saved \$1 billion since 1999 by concentrating back-office work in Costa Rica, the Philippines and Britain. ("In the Age of the Internet, A Company's Location Hardly Matters," May 12, 2003).

³ A recent survey of 145 U.S. companies by Forrester Research found that 88 percent of the firms that look overseas for services claimed to get better value for their money offshore than from U.S. providers, while 71 percent said offshore workers did better quality work.

elsewhere, and we will need to replace both with high-skilled, high-wage opportunities to grow our standard of living. Our success or failure will turn on our ability to create and retain new jobs, new industries and new processes, goods and services – to innovate.

INNOVATION IN AMERICA

Starting in early 2002, the Commerce Department convened a series of roundtables and outreach efforts to assess the state of innovation in America. We were particularly interested in better understanding the factors that influenced some private actors when they were deciding where to locate their R&D and knowledge work. Our goal, of course, was to assess how we might maximize those elements that promote innovation in America, while reducing any comparative disadvantages that discourage on-shore R&D. Transcripts from these discussions can be found on our web site at

www.technology.gov/reports.htm.

WHY INNOVATORS LOCATE KNOWLEDGE WORK ON U.S. SHORES

According to the corporate, university and government leaders we convened, America presently remains the premier destination for innovative activity for several reasons.

1. **PEOPLE.** The scientific talent pool in this country is second to none, with industry experts, lab scientists and university researchers all contributing to an unmatched quality and quantity of expertise. For example, America publishes one-third of the world's scientific and technical articles, triple the share of the next largest country, and has the largest share of the world's science, engineering, and technical workforce (according to NSF data). Our university system is unequalled, attracting the best and brightest from around the world and remaining a hotbed for generating inventions and training inventors.
2. **BUSINESS CLIMATE.** America has the most entrepreneurial business climate, one promoting market-based competition, rewarding risk, permitting failure and relatively easy access to capital. Unburdened by government-owned national champions, new ideas and new entrants are able to compete and win on the merits. In this regard we fare very well against many European competitors, where governmental burdens make entrepreneurship more difficult and less common. For example, in March 2002 the *Wall Street Journal* reported on a British study that found it takes 43 months on average to get the regulatory approval needed to open a gas station in Europe, three times longer than in the U.S.
3. **INFRASTRUCTURE.** From world-class federal labs such as the National Institute of Standards & Technology and Argonne National Lab, to our telecom, energy and transportation systems, America's infrastructure permits cutting-edge R&D almost anywhere in our nation. Innovators and technology entrepreneurs stay here to leverage these unique assets that underlie competitive discoveries and speed time-to-market.
4. **MARKET ACCESS:** Innovators want to conduct R&D in the world's biggest and wealthiest market – close to the customer – with consumer, business and

government spending encouraging innovation in America. Our culture offers a good fit for innovators – consumers are eager for new gadgets and medicines, success is rewarded handsomely and innovators are celebrated as cultural icons (e.g. Thomas Edison, Bill Gates, Albert Einstein, Jeff Bezos, etc.).

5. **INTELLECTUAL PROPERTY PROTECTION.** It is not surprising that innovators will create jobs and technologies wherever their ideas are best protected and most profitable. The United States boasts the most consistent protections for intellectual property rights, the most effective patent office, and the system least likely to impose price controls over intensely innovative products such as pharmaceuticals. In this area we retain a significant advantage over rising powerhouse China, with its far less consistent commitment and ability to protect and develop intellectual property.
6. **GOVERNMENT.** We provide an honest and transparent government, with political stability and a broad respect for the rule of law. While government taxes and regulates, we do not prop up national champions and we rely on the market, not federal agencies, to pick winners and losers.
7. **QUALITY OF LIFE.** People who can choose where to live are often attracted by America's high quality of life, the result in large part of our democracy, freedoms, clean environment and outstanding health care system. America's relative security and abundance likewise attract the best-and-brightest to live and work on our shores.

WHY INNOVATORS GO OFFSHORE

At the same time, multiple factors are encouraging accelerating R&D and knowledge work in other parts of the world. While the National Science Foundation reports that the United States accounted for 44 percent of the total R&D among OECD nations in 2001 – more than the rest of the G7 nations combined – we accounted for 70 percent of this total in 1970. A great many nations have witnessed America's unparalleled economic success over the past 60 years and understandably seek to emulate it by fostering their own innovation excellence. The rest of the world is not standing still, and they are competing for a growing share of foreign direct investment in research and knowledge work. Here's why:

1. **COST.** Research talent and facilities cost appreciably less in many areas of the world. Similarly, many foreign nations offer businesses and researchers significant financial incentives to locate R&D (and manufacturing) within their borders.
2. **PEOPLE.** There are many highly talented researchers among the more than six billion people on the planet who are not U.S. citizens, and some foreign nations such as China are now graduating more physical science and engineering students than the U.S. every year. U.S. companies facing global competition want to tap the best and the brightest, wherever they may live, and the GE's, Microsoft's,

IBM's and others like them are investing heavily in new research facilities in emerging technology clusters such as Bangalore, India and Guangdong Province, China.

3. **MARKET ACCESS.** Many business leaders are attracted to the perceived market possibilities in nations such as China and India, with 2.4 billion people between them. Other innovators believe they need to globalize their research efforts to overcome foreign government impediments to doing business (e.g. standards), or to ensure they can gain needed regulatory approvals in the future (e.g. merger approvals).
4. **INFRASTRUCTURE.** Foreign governments are making their own investments in university and lab research facilities, transportation, energy and telecommunications to more effectively compete. It is no accident that the new global clusters attracting the most foreign investment and most knowledge work are precisely those with the most advanced infrastructures.
5. **BUSINESS CLIMATE.** A great number of top-tier innovative companies explain moves to Asia by pointing to their less burdensome taxation, regulation and litigation environments. These reflect both bottom-line and speed-to-market concerns, although many appropriately question whether nations lacking in freedom, robust intellectual property rights, worker and environmental protections can sustain innovation leadership over a long period.
6. **PROXIMITY TO OFFSHORE MANUFACTURING.** While the rise in offshore IT service work does not appear to result predominantly from the global migration of manufacturing, some suggest that other white-collar service and R&D jobs may be pulled abroad by off-shored manufacturing. Semiconductor industry experts, for example, indicate chip design work needs to happen close to manufacturing facilities.

LONG-TERM CHALLENGES

Going forward, the quality and intensity of global competition is likely to increase. Foreign nations will continue to make their business climates more attractive to global innovation leaders. We may take some comfort from the fact that we have risen to seemingly overwhelming challenges before – my office was established in the 1980s, with Congress convinced that we were insufficiently competitive with “Japan, Inc.” Our economy, people and systems will face tougher challenges in the 21st century than ever before, particularly as the pace of change accelerates, disruptions cut deeper and complexity increases. Four long-term challenges stand out in particular.

1. **Building the best and brightest.** Within a generation we will need a far more science-literate, technology-savvy society than we have today. Yet American students at the K-12 level continue to lag behind their international counterparts in math and science learning. U.S. eighth graders ranked 19th out of 38 nations in math and 18th in science in the 1999 Third International Math & Science Study Repeat. The World Competitiveness

Yearbook ranked the U.S. 24th out of 45 nations in science education and 18th in “attractiveness of S&T to youth.” Other nations are aggressively acting to stem their own brain drains and entice citizens trained in the U.S. to return to their native countries, and many are succeeding. *How can we grow, educate, attract and retain the best and brightest scientists and engineering students?*

2. Funding the Future. Americans enjoy and expect a very generous entitlement system. Retirees are living longer and receiving far more in government benefits than they ever paid into the system. According to the Congressional Budget Office, in 2001, the big entitlement programs accounted for 26 percent of non-interest federal spending; but in 2030, they could account for up to 70 percent. Things we can afford to provide our parents may well become too expensive for our children to pay for us. *How can we ensure sustained federal support for education, infrastructure, and research and development?*
3. Defining national interests in a global economy. While policymakers try to promote national interests, it is getting much harder to define them as the global economy develops. For example, is it better for America to buy a BMW made in South Carolina or a Ford made in Canada? How about IT services procured through IBM but performed in India, versus services purchased from Infosys but staffed using H1B workers living and spending their salaries in America? Is it better to help manufacturers remain competitive by enabling them to cut IT costs through off-shoring or help IT service workers remain employed by shielding them from global competition? New Jersey recently wrestled with a similar question when its Department of Human Services (Division of Family Development) off-shored a basic call center used to support a welfare program. In the wake of controversy, the state returned the nine jobs to New Jersey, albeit at 20 percent higher cost (thereby reducing the amount of funds available for the welfare recipients for whom the call center is needed). *How will we answer the question when seeking to maximize resources for medical care for the elderly, education for our children or homeland defense?*
4. Equipping people and building systems able to cope with change. If accelerating change is the one constant in the 21st Century, then we will need systems that can rapidly adapt and people who can constantly learn and improve their skills. The IT worker challenge offers the quintessential example. In the late 1990s there was much talk of IT worker “shortages,” and many companies complained of difficulty in filling jobs even as many IT workers applied often but could not find work. In fact, the aggregate number of self-classified IT workers was probably equal to the number of corporate-classified IT jobs available – hence the extreme and understandable frustration among existing IT workers. But what did not always match up were current skill sets. Mainframe programmers were not network administrators, Cobol is not C++, and someone ready to hit the ground running in Y2K remediation is not necessarily ready to tackle wireless security issues. As our report released this week explains, because employers demand immediate expertise in whatever skill is “hot,” and today’s hot skill may not be in demand tomorrow, we could face a perennial skills mismatch putting great stress on our IT workforce and providers. *How do we best equip U.S. workers with the tools, opportunity*

and resources to constantly update their skills and the ability to compete in a just-in-time world?

BUSH ADMIN INNOVATION & JOBS AGENDA

To keep pace with change in such a dynamic environment, and to maintain American leadership, competitiveness and job growth, the Administration is pursuing a high tech agenda that optimizes the environment for innovation. As President Bush observed on June 12, 2002:

We'll continue to support science and technology because innovation makes America stronger. Innovation helps Americans to live longer, healthier and happier lives. Innovation helps our economy grow, and helps people find work. Innovation strengthens our national defense and our homeland security.

Specifically, our policies aim to promote innovation, support entrepreneurship, improve infrastructure and empower people.

To promote innovation, the President has proposed aggressive investments in new research and development – \$123 billion for 2004, up more than 25 percent since taking office, with significant increases in critical emerging technologies such as nanotechnology and biotech. This will help ensure an ongoing innovation pipeline and a well-trained science and technology workforce. We have also been asking Congress to make the research and experimentation tax credit permanent, to reflect the importance of private investments in R&D, which are twice as large as government's. We are trying to strengthen intellectual property protection – by devoting far more resources to the U.S. Patent & Trademark Office within the Commerce Department, overhauling its policies and procedures to speed operations and improve quality, and by enforcing intellectual property rights aggressively at home and abroad. The President also launched an initiative to improve math and science teaching at the K-12 level, devoting \$1 billion through the National Science Foundation and Department of Education over five years.

To support an entrepreneurial business climate, the President continues to offer pro-job growth, pro-tech fiscal policies. Many experts believed the 2001 tax cut moderated the recession that began one month before President Bush took office. Our 2002 stimulus package extended benefits for displaced workers and accelerated depreciation schedules for businesses investment in capital equipment, which helped maintain new business investment in IT in the wake of uncertainty exacerbated by 9/11 and the corporate corruption scandals. The President's recently enacted jobs and growth package should further stimulate job creation, investment and growth, including a tripling of allowances for small business investments. We are aggressively promoting export opportunities for American companies through the WTO and in multiple bilateral agreements, working to open global markets for goods and services made by American workers. The President has proposed expanding citizens' access to quality health care by reducing costs imposed by frivolous litigation and expanding prescription drug benefits for seniors. And the Administration has taken a leadership role in addressing concerns about investor confidence after the excesses of the 1990s by aggressively prosecuting those who broke

the law, implementing new rules to strengthen corporate governance and increasing transparency for investors.

To improve our infrastructure, the President's technology priorities include hardening the Nation's defenses, especially critical infrastructure protection and cyber security; implementing a national energy plan that uses innovative technologies to improve energy efficiency while expanding generation and transmission capacities; strongly supporting deployment and use of high-speed Internet (broadband) networks; and improving the efficiency with which we manage radio spectrum. Led by our colleagues at Commerce's NTIA, we have made great strides already in spectrum, breaking a two year logjam to find spectrum for 3G services, supporting the elimination of spectrum caps, proposing a plan to expand spectrum available for unlicensed data use in the 5 GHz space (pending ratification at the World Radio Conference), and creating a fund to ensure that government users can relocate when the spectrum they are currently using is allocated for commercial use.

Lastly, to empower people, the President made e-government a top management priority for the Administration, leveraging federal investments in IT (\$59 billion proposed for 2004) to provide more services to citizens and operate government more efficiently. Of greatest importance to this President may be the bipartisan efforts to improve our Nation's education system, exemplified by the No Child Left Behind Act. The most significant education reform in a generation, effective implementation of this legislation will be key to sustaining American leadership and productivity in the 21st Century by ensuring our children learn and know how to learn. To remain globally competitive – both as a tech-led economy and as the most-inclusive opportunity society – we must place education first, and that is what President Bush is doing.

CONCLUSIONS AND RECOMMENDATIONS

Notwithstanding this ambitious agenda, much work remains. Certainly we will need further analysis to understand the impact of global competition in white-collar service work on American prosperity and competitiveness, separating so-called globalization trends from the economic shocks of the post-bubble, post-9/11, post-Enron and post-Iraq world. One thing we already know is that American workers and employers will face unprecedented global competition going forward, and we must be ready.

We will need to develop systems that can anticipate and address rapid and complex changes in the marketplace. In the information technology workforce world this means improved learning environments and training opportunities. We will need to find ways to boost the productivity and effectiveness of American IT workers to overcome wage disparities, building a dynamic and responsive re-skilling landscape.

Global competition accelerates creative destruction, which can be good for innovative and market-based economies overall, but terribly difficult for displaced communities and individuals. America must never compete in the battle to see who can pay their workers the least, and it will take sustained innovation to ensure we don't have to. Congress and the Administration will need to work together on further policies that enable Americans

to compete and win on our own terms, and we look forward to assisting this Committee in the months and years ahead.